

We Claim:

1. An ultrasonic dental insert for an ultrasonic dental tool, comprising:

a transducer for generating ultrasonic vibrations;

5 a connecting body having a proximal end and a distal end, the proximal end attached to the transducer, the distal end having an engagement portion formed thereon;

a hand grip enveloping at least a portion of the connecting body;

10 at least one O-ring for shock absorption, mounted between the connecting body and the hand grip and around the engagement portion; and

a removable tip engaging the engagement portion.

15 2. The ultrasonic dental insert of claim 1, wherein the removable tip is made of resin or metal.

3. The ultrasonic dental insert of claim 1, wherein the removable tip comprises an attachment portion for engaging the
20 engagement portion.

4. The ultrasonic dental insert of claim 3, wherein the removable tip comprises a tapered portion coupled to the attachment portion.
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5. The ultrasonic dental insert of claim 4, wherein the tapered portion has a generally conical wall that defines a conduit therethrough for carrying fluid used during ultrasonic dental procedures.
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6. The ultrasonic dental insert of claim 4, wherein the removable tip further comprises an external tube attached along

the tapered portion for carrying fluid used during ultrasonic dental procedures.

7. The ultrasonic dental insert of claim 4, wherein the tapered portion has a groove formed thereon for carrying fluid used during ultrasonic dental procedures.

8. The ultrasonic dental insert of claim 4, wherein the tapered portion has a substantially circular cross section whose diameter decreases gradually from a first end near the connecting body to a second end.

9. The ultrasonic dental insert of claim 3, wherein the attachment portion is threaded to engage the engagement portion, which is also threaded.

10. The ultrasonic dental insert of claim 9, wherein the engagement portion comprises a generally cylindrical wall defining a threaded tap for receiving the attachment portion.

11. The ultrasonic dental insert of claim 3, wherein the engagement portion comprises a generally cylindrical wall defining a cavity, and the attachment portion is pressure fit into the cavity.

12. The ultrasonic dental insert of claim 1, wherein the tapered portion includes a first portion which is generally aligned with the connecting body, and a second portion which is curved at an angle from the first portion.

13. The ultrasonic dental insert of claim 1, wherein the hand grip has formed thereon a plurality of bumps for facilitating grasping by a dental practitioner.

5 14. An ultrasonic dental unit comprising:

an insert comprising:

a transducer for generating ultrasonic vibrations;

10 a connecting body having a proximal end and a distal end, the proximal end attached to the transducer, the distal end having an engagement portion formed thereon;

a hand grip enveloping at least a portion of the connecting body;

15 at least one O-ring for shock absorption, mounted between the connecting body and the hand grip and around the engagement portion; and

a removable tip engaging the engagement portion; and

20 an ultrasonic dental handpiece for receiving the insert and comprising a coil assembly for exciting the transducer.

15 15. The ultrasonic dental unit of claim 14, wherein the removable tip is made of metal or resin.

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16. The ultrasonic dental unit of claim 14, further comprising an electrical energy and fluid source for providing electrical signals for energizing coil assembly and fluid to the ultrasonic dental handpiece.

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17. The ultrasonic dental unit of claim 14, wherein the removable tip comprises an attachment portion for engaging the engagement portion.

5 18. The ultrasonic dental unit of claim 17, wherein the removable tip comprises a tapered portion coupled to the attachment portion.

10 19. The ultrasonic dental unit of claim 18, wherein the tapered portion has a generally conical wall that defines a conduit therethrough for carrying fluid used during ultrasonic dental procedures.

15 20. The ultrasonic dental unit of claim 18, wherein the removable tip further comprises an external tube attached along the tapered portion for carrying fluid used during ultrasonic dental procedures.

20 21. The ultrasonic dental insert of claim 18, wherein the tapered portion has a groove formed thereon for carrying fluid used during ultrasonic dental procedures.

25 22. The ultrasonic dental insert of claim 18, wherein the tapered portion has a substantially circular cross section whose diameter decreases gradually from a first end near the connecting body to a second end.

30 23. The ultrasonic dental insert of claim 17, wherein the attachment portion is threaded to engage the engagement portion, which is also threaded.

24. The ultrasonic dental insert of claim 23, wherein the engagement portion comprises a generally cylindrical wall defining a threaded tap for receiving the attachment portion.

- 5 25. The ultrasonic dental insert of claim 17, wherein the engagement portion comprises a generally cylindrical wall defining a cavity, and the attachment portion is pressure fit into the cavity.